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 Ser Cys Cys Ser Leu Asn Gly Gly Gly Tyr Ala Glu Ile Met Val Pro  
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 caa gga att tac gat ggg gag acg tta act gta tca ttt ccc tat act 144  
 Gln Gly Ile Tyr Asp Gly Glu Thr Leu Thr Val Ser Phe Pro Tyr Thr  
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 gtt ata gga gat ccg agt ggg act act gtt ttt tct gca gga gag tta 192  
 Val Ile Gly Asp Pro Ser Gly Thr Thr Val Phe Ser Ala Gly Glu Leu  
 50 55 60  
 acg tta aaa aat ctt gac aat tct att gca gct ttg cct tta agt tgt 240  
 Thr Leu Lys Asn Leu Asp Asn Ser Ile Ala Ala Leu Pro Leu Ser Cys  
 65 70 75 80  
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 Phe Gly Asn Leu Leu Gly Ser Phe Thr Val Leu Gly Arg Gly His Ser  
 85 90 95  
 ttg act ttc gag aac ata cgg act tct aca aat gga gct gca cta agt 336  
 Leu Thr Phe Glu Asn Ile Arg Thr Ser Thr Asn Gly Ala Ala Leu Ser  
 100 105 110  
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 Asp Ser Ala Asn Ser Gly Leu Phe Thr Ile Glu Gly Phe Lys Glu Leu  
 115 120 125  
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 145 150 155 160  
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 180 185 190  
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 225 230 235 240  
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 245 250 255

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 260 265 270  
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 305 310 315 320  
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 325 330 335  
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 Gly Ala Ile Phe Cys Lys Asn Gly Ala Gln Ala Ala Gly Ser Asn Asn  
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 Ser Gly Ser Val Ser Phe Asp Gly Glu Gly Val Val Phe Phe Ser Ser  
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 Asn Val Ala Ala Gly Lys Gly Gly Ala Ile Tyr Ala Lys Lys Leu Ser  
 370 375 380  
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 Val Ala Asn Cys Gly Pro Val Gln Leu Leu Gly Asn Ile Ala Asn Asp  
 385 390 395 400  
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 405 410 415  
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 Asp Tyr Gly Asp Met Ile Phe Asp Gly Asn Leu Lys Arg Thr Ala Lys  
 420 425 430  
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 His Gln Ile Leu Phe Asn Asp Pro Ile Glu Met Ala Asn Gly Asn Asn  
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 Gln Pro Ala Gln Ser Ser Glu Pro Leu Lys Ile Asn Asp Gly Glu Gly  
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595 600 605

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610 615 620

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Ala Tyr Asp Arg Tyr Asp Trp Leu Gly Ser Asn Gln Lys Ile Asp Val

625 630 635 640

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645 650 655

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660 665 670

aag ctt gcg tgg gat cct aat aca gca aat aat ggt cct tat act ctg 2064  
Lys Leu Ala Trp Asp Pro Asn Thr Ala Asn Asn Gly Pro Tyr Thr Leu

675 680 685

aaa gct aca tgg act aaa act ggg tat aat cct ggg cct gag cga gta 2112  
Lys Ala Thr Trp Thr Lys Thr Gly Tyr Asn Pro Gly Pro Glu Arg Val

690 695 700

gct tct ttg gtt cca aat agt tta tgg gga tcc att tta gat ata cga 2160  
Ala Ser Leu Val Pro Asn Ser Leu Trp Gly Ser Ile Leu Asp Ile Arg

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725 730 735

cga gga tta tgg gtt tct gga gtt tcg aat ttc ttc tat cat gac cgc 2256  
Arg Gly Leu Trp Val Ser Gly Val Ser Asn Phe Phe Tyr His Asp Arg

740 745 750

gat gct tta ggt cag gga tat cgg tat att agt ggg ggt tat tcc tta 2304  
Asp Ala Leu Gly Gln Gly Tyr Arg Tyr Ile Ser Gly Gly Tyr Ser Leu

755 760 765

gga gca aac tcc tac ttt gga tca tcg atg ttt ggt cta gca ttt act 2352  
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770 775 780

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785 790 795 800

cat gct tgc ata gga tcc gtt tat cta tct acc aaa cag gct tta tgt 2448  
His Ala Cys Ile Gly Ser Val Tyr Leu Ser Thr Lys Gln Ala Leu Cys

805 810 815

gga tct tat gtg ttt gga gat gcg ttt att cgt gct agc tac ggg ttt 2496  
Gly Ser Tyr Val Phe Gly Asp Ala Phe Ile Arg Ala Ser Tyr Gly Phe

820 825 830

ggg aat cag cat atg aaa acc tca tat aca ttt gca gag gag agc gat 2544  
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835 840 845

gtt tgt tgg gat aat aac tgt ctg gtt gga gag att gga gtg gga tta 2592  
Val Cys Trp Asp Asn Asn Cys Leu Val Gly Glu Ile Gly Val Gly Leu

850 855 860

ccg att gtg att act cca tct aag ctc tat ttg aat gag ttg cgt cct 2640  
Pro Ile Val Ile Thr Pro Ser Lys Leu Tyr Leu Asn Glu Leu Arg Pro

865 870 875 880

ttc gtg caa gct gag ttt tct tat gcc gat cat gaa tct ttt aca gag 2688  
Phe Val Gln Ala Glu Phe Ser Tyr Ala Asp His Glu Ser Phe Thr Glu

885 890 895

gaa ggc gat caa gct cgg gca ttc agg agt gga cat ctc atg aat cta 2736  
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900 905 910

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D12

Ser Val Pro Val Gly Val Lys Phe Asp Arg Cys Ser Ser Thr His Pro  
 915 920 925  
 aat aaa tat agc ttt atg ggg gct tat atc tgt gat gct tat cgc acc 2832  
 Asn Lys Tyr Ser Phe Met Gly Ala Tyr Ile Cys Asp Ala Tyr Arg Thr  
 930 935 940  
 atc tct ggg act cag aca aca ctc cta tcc cat caa gag aca tgg aca 2880  
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 945 950 955 960  
 aca gat gcc ttt cat ttg gca aga cat gga gtc ata gtt aga ggg tct 2928  
 Thr Asp Ala Phe His Leu Ala Arg His Gly Val Ile Val Arg Gly Ser  
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 Met Tyr Ala Ser Leu Thr Ser Asn Ile Glu Val Tyr Gly His Gly Arg  
 980 985 990  
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 <213> Chlamydia sp.

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 Thr Leu Lys Asn Leu Asp Asn Ser Ile Ala Ala Leu Pro Leu Ser Cys  
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 Phe Gly Asn Leu Leu Gly Ser Phe Thr Val Leu Gly Arg Gly His Ser  
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 Leu Thr Phe Glu Asn Ile Arg Thr Ser Thr Asn Gly Ala Ala Leu Ser  
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 115 120 125  
 Ser Phe Ser Asn Cys Asn Pro Leu Leu Ala Val Leu Pro Ala Ala Thr  
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 Thr Asn Asn Gly Ser Gln Thr Pro Ser Thr Thr Ser Thr Pro Ser Asn  
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Gly Thr Ile Tyr Ser Lys Thr Asp Leu Leu Leu Leu Asn Asn Glu Lys  
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 180 185 190  
 Ala Lys Ser Leu Thr Val Gln Gly Ile Ser Lys Leu Cys Val Phe Gln  
 195 200 205  
 Glu Asn Thr Ala Gln Ala Asp Gly Gly Ala Cys Gln Val Val Thr Ser  
 210 215 220  
 Phe Ser Ala Met Ala Asn Glu Ala Pro Ile Ala Phe Val Ala Asn Val  
 225 230 235 240  
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 245 250 255  
 D12 Gly Val Ser Ser Ser Thr Ser Thr Glu Asp Pro Val Val Ser Phe Ser  
 260 265 270  
 Arg Asn Thr Ala Val Glu Phe Asp Gly Asn Val Ala Arg Val Gly Gly  
 275 280 285  
 Gly Ile Tyr Ser Tyr Gly Asn Val Ala Phe Leu Asn Asn Gly Lys Thr  
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 Leu Phe Leu Asn Asn Val Ala Ser Pro Val Tyr Ile Ala Ala Glu Gln  
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 Pro Thr Asn Gly Gln Ala Ser Asn Thr Ser Asp Asn Tyr Gly Asp Gly  
 325 330 335  
 Gly Ala Ile Phe Cys Lys Asn Gly Ala Gln Ala Ala Gly Ser Asn Asn  
 340 345 350  
 Ser Gly Ser Val Ser Phe Asp Gly Glu Gly Val Val Phe Phe Ser Ser  
 355 360 365  
 Asn Val Ala Ala Gly Lys Gly Gly Ala Ile Tyr Ala Lys Lys Leu Ser  
 370 375 380  
 Val Ala Asn Cys Gly Pro Val Gln Leu Leu Gly Asn Ile Ala Asn Asp  
 385 390 395 400  
 Gly Gly Ala Ile Tyr Leu Gly Glu Ser Gly Glu Leu Ser Leu Ser Ala  
 405 410 415  
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 420 425 430  
 Glu Asn Ala Ala Asp Val Asn Gly Val Thr Val Ser Ser Gln Ala Ile  
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 Ser Met Gly Ser Gly Gly Lys Ile Thr Thr Leu Arg Ala Lys Ala Gly  
 450 455 460  
 His Gln Ile Leu Phe Asn Asp Pro Ile Glu Met Ala Asn Gly Asn Asn  
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Tyr Thr Gly Asp Ile Val Phe Ala Asn Gly Asn Ser Thr Leu Tyr Gln  
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 Ala Gly Ser Thr Leu Asp Phe Val Thr Pro Gln Pro Pro Gln Gln Pro  
 545 550 555 560  
 Pro Ala Ala Asn Gln Ser Ile Thr Leu Ser Asn Leu His Leu Ser Leu  
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 Ser Ser Leu Leu Ala Asn Asn Ala Val Thr Asn Pro Pro Thr Asn Pro  
 580 585 590  
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 595 600 605  
 Ser Val Thr Ile Ser Gly Pro Ile Phe Phe Glu Asp Leu Asp Asp Thr  
 610 615 620  
 Ala Tyr Asp Arg Tyr Asp Trp Leu Gly Ser Asn Gln Lys Ile Asp Val  
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 Ser Ala His Ser Ala Ile Gln Ala Ser Val Asp Gly Arg Ser Tyr Cys  
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 Arg Gly Leu Trp Val Ser Gly Val Ser Asn Phe Phe Tyr His Asp Arg  
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 Asp Ala Leu Gly Gln Gly Tyr Arg Tyr Ile Ser Gly Gly Tyr Ser Leu  
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 Gly Ala Asn Ser Tyr Phe Gly Ser Ser Met Phe Gly Leu Ala Phe Thr  
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 His Ala Cys Ile Gly Ser Val Tyr Leu Ser Thr Lys Gln Ala Leu Cys  
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 Gly Ser Tyr Val Phe Gly Asp Ala Phe Ile Arg Ala Ser Tyr Gly Phe  
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Gly Asn Gln His Met Lys Thr Ser Tyr Thr Phe Ala Glu Glu Ser Asp  
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Val Cys Trp Asp Asn Asn Cys Leu Val Gly Glu Ile Gly Val Gly Leu  
850 855 860

Pro Ile Val Ile Thr Pro Ser Lys Leu Tyr Leu Asn Glu Leu Arg Pro  
865 870 875 880

Phe Val Gln Ala Glu Phe Ser Tyr Ala Asp His Glu Ser Phe Thr Glu  
885 890 895

D12 Glu Gly Asp Gln Ala Arg Ala Phe Arg Ser Gly His Leu Met Asn Leu  
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Ser Val Pro Val Gly Val Lys Phe Asp Arg Cys Ser Ser Thr His Pro  
915 920 925

Asn Lys Tyr Ser Phe Met Gly Ala Tyr Ile Cys Asp Ala Tyr Arg Thr  
930 935 940

Ile Ser Gly Thr Gln Thr Thr Leu Leu Ser His Gln Glu Thr Trp Thr  
945 950 955 960

Thr Asp Ala Phe His Leu Ala Arg His Gly Val Ile Val Arg Gly Ser  
965 970 975

Met Tyr Ala Ser Leu Thr Ser Asn Ile Glu Val Tyr Gly His Gly Arg  
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 cct caa gga att tac gat ggg gag acg tta act gta tca ttt ccc tat 144  
 Pro Gln Gly Ile Tyr Asp Gly Glu Thr Leu Thr Val Ser Phe Pro Tyr  
 35 40 45  
 act gtt ata gga gat ccg agt ggg act act gtt ttt tct gca gga gag 192  
 Thr Val Ile Gly Asp Pro Ser Gly Thr Thr Val Phe Ser Ala Gly Glu  
 50 55 60  
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 Leu Thr Leu Lys Asn Leu Asp Asn Ser Ile Ala Ala Leu Pro Leu Ser  
 65 70 75 80  
 tgt ttt ggg aac tta tta ggg agt ttt act gtt tta ggg aga gga cac 288  
 Cys Phe Gly Asn Leu Leu Gly Ser Phe Thr Val Leu Gly Arg Gly His  
 85 90 95  
 tcg ttg act ttc gag aac ata cgg act tct aca aat gga gct gca cta 336  
 Ser Leu Thr Phe Glu Asn Ile Arg Thr Ser Thr Asn Gly Ala Ala Leu  
 100 105 110  
 agt gac agc gct aat agc ggg tta ttt act att gag ggt ttt aaa gaa 384  
 Ser Asp Ser Ala Asn Ser Gly Leu Phe Thr Ile Glu Gly Phe Lys Glu  
 115 120 125  
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 145 150 155 160  
 aat ggt act att tat tct aaa aca gat ctt ttg tta ctc aat aat gag 528  
 Asn Gly Thr Ile Tyr Ser Lys Thr Asp Leu Leu Leu Leu Asn Asn Glu  
 165 170 175  
 aag ttc tca ttc tat agt aat tta gtc tct gga gat ggg gga act ata 576  
 Lys Phe Ser Phe Tyr Ser Asn Leu Val Ser Gly Asp Gly Gly Thr Ile  
 180 185 190  
 gat gct aag agc tta acg gtt caa gga att agc aag ctt tgt gtc ttc 624  
 Asp Ala Lys Ser Leu Thr Val Gln Gly Ile Ser Lys Leu Cys Val Phe  
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 Gln Glu Asn Thr Ala Gln Ala Asp Gly Gly Ala Cys Gln Val Val Thr  
 210 215 220  
 agt ttc tct gct atg gct aac gag gct cct att gcc ttt ata gcg aat 720  
 Ser Phe Ser Ala Met Ala Asn Glu Ala Pro Ile Ala Phe Ile Ala Asn  
 225 230 235 240  
 gtt gca gga gta aga ggg gga ggg att gct gct gtt cag gat ggg cag 768  
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 Gln Gly Val Ser Ser Ser Thr Ser Thr Glu Asp Pro Val Val Ser Phe  
 260 265 270  
 tcc aga aat act gcg gta gag ttt gat ggg aac gta gcc cga gta gga 864



Ser Arg Asn Thr Ala Val Glu Phe Asp Gly Asn Val Ala Arg Val Gly  
 275 280 285  
 gga ggg att tac tcc tac ggg aac gtt gct ttc ctg aat aat gga aaa 912  
 Gly Gly Ile Tyr Ser Tyr Gly Asn Val Ala Phe Leu Asn Asn Gly Lys  
 290 295 300  
 acc ttg ttt ctc aac aat gtt gct tct cct gtt tac att gct gct gag 960  
 Thr Leu Phe Leu Asn Asn Val Ala Ser Pro Val Tyr Ile Ala Ala Glu  
 305 310 315 320  
 caa cca aca aat gga cag gct tct aat acg agt gat aat tac gga gat 1008  
 Gln Pro Thr Asn Gly Gln Ala Ser Asn Thr Ser Asp Asn Tyr Gly Asp  
 325 330 335  
 gga gga gct atc ttc tgt aag aat ggt gcg caa gca gca gga tcc aat 1056  
 Gly Gly Ala Ile Phe Cys Lys Asn Gly Ala Gln Ala Ala Gly Ser Asn  
 340 345 350  
 aac tct gga tca gtt tcc ttt gat gga gag gga gta gtt ttc ttt agt 1104  
 Asn Ser Gly Ser Val Ser Phe Asp Gly Glu Gly Val Val Phe Phe Ser  
 355 360 365  
 agc aat gta gct gct ggg aaa ggg gga gct att tat gcc aaa aag ctc 1152  
 Ser Asn Val Ala Ala Gly Lys Gly Gly Ala Ile Tyr Ala Lys Lys Leu  
 370 375 380  
 tcg gtt gct aac tgt ggc cct gta caa ttc tta ggg aat atc gct aat 1200  
 Ser Val Ala Asn Cys Gly Pro Val Gln Phe Leu Gly Asn Ile Ala Asn  
 385 390 395 400  
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 405 410 415  
 gct gat tat gga gat att att ttc gat ggg aat ctt aaa aga aca gcc 1296  
 Ala Asp Tyr Gly Asp Ile Ile Phe Asp Gly Asn Leu Lys Arg Thr Ala  
 420 425 430  
 aaa gag aat gct gcc gat gtt aat ggc gta act gtg tcc tca caa gcc 1344  
 Lys Glu Asn Ala Ala Asp Val Asn Gly Val Thr Val Ser Ser Gln Ala  
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 Ile Ser Met Gly Ser Gly Gly Lys Ile Thr Thr Leu Arg Ala Lys Ala  
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 Gly His Gln Ile Leu Phe Asn Asp Pro Ile Glu Met Ala Asn Gly Asn  
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 Asn Gln Pro Ala Gln Ser Ser Glu Pro Leu Lys Ile Asn Asp Gly Glu  
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 Gly Tyr Thr Gly Asp Ile Val Phe Ala Asn Gly Asn Ser Thr Leu Tyr  
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 Gln Asn Val Thr Ile Glu Gln Gly Arg Ile Val Leu Arg Glu Lys Ala  
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 Lys Leu Ser Val Asn Ser Leu Ser Gln Thr Gly Gly Ser Leu Tyr Met  
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 Pro Pro Ala Ala Asn Gln Leu Ile Thr Leu Ser Asn Leu His Leu Ser  
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 Leu Ser Ser Leu Leu Ala Asn Asn Ala Val Thr Asn Pro Pro Thr Asn  
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D12

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 Thr Ala Tyr Asp Arg Tyr Asp Trp Leu Gly Ser Asn Gln Lys Ile Asp  
 625 630 635 640  
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 Asp Leu Thr Leu Gly Asn Glu Met Pro Lys Tyr Gly Tyr Gln Gly Ser  
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 Leu Ser Val Pro Val Gly Val Lys Phe Asp Arg Cys Ser Ser Thr His  
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 Pro Asn Lys Tyr Ser Phe Met Gly Ala Tyr Ile Cys Asp Ala Tyr Arg

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 50 55 60  
 Leu Thr Leu Lys Asn Leu Asp Asn Ser Ile Ala Ala Leu Pro Leu Ser  
 65 70 75 80  
 Cys Phe Gly Asn Leu Leu Gly Ser Phe Thr Val Leu Gly Arg Gly His  
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 Ser Leu Thr Phe Glu Asn Ile Arg Thr Ser Thr Asn Gly Ala Ala Leu  
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 Ser Asp Ser Ala Asn Ser Gly Leu Phe Thr Ile Glu Gly Phe Lys Glu  
 115 120 125  
 Leu Ser Phe Ser Asn Cys Asn Ser Leu Leu Ala Val Leu Pro Ala Ala  
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 Thr Thr Asn Asn Gly Ser Gln Thr Pro Thr Thr Thr Ser Thr Pro Ser  
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 Asn Gly Thr Ile Tyr Ser Lys Thr Asp Leu Leu Leu Leu Asn Asn Glu  
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 Lys Phe Ser Phe Tyr Ser Asn Leu Val Ser Gly Asp Gly Gly Thr Ile

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 Asp Ala Lys Ser Leu Thr Val Gln Gly Ile Ser Lys Leu Cys Val Phe  
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 Gln Glu Asn Thr Ala Gln Ala Asp Gly Gly Ala Cys Gln Val Val Thr  
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 Ser Arg Asn Thr Ala Val Glu Phe Asp Gly Asn Val Ala Arg Val Gly  
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 Thr Leu Phe Leu Asn Asn Val Ala Ser Pro Val Tyr Ile Ala Ala Glu  
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 Gln Pro Thr Asn Gly Gln Ala Ser Asn Thr Ser Asp Asn Tyr Gly Asp  
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 Gly Gly Ala Ile Phe Cys Lys Asn Gly Ala Gln Ala Ala Gly Ser Asn  
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 Ser Asn Val Ala Ala Gly Lys Gly Gly Ala Ile Tyr Ala Lys Lys Leu  
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 Ala Asp Tyr Gly Asp Ile Ile Phe Asp Gly Asn Leu Lys Arg Thr Ala  
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 Lys Glu Asn Ala Ala Asp Val Asn Gly Val Thr Val Ser Ser Gln Ala  
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 Gly Tyr Thr Gly Asp Ile Val Phe Ala Asn Gly Asn Ser Thr Leu Tyr  
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Gln Asn Val Thr Ile Glu Gln Gly Arg Ile Val Leu Arg Glu Lys Ala  
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Leu Pro Ile Val Thr Thr Pro Ser Lys Leu Tyr Leu Asn Glu Leu Arg  
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Pro Phe Val Gln Ala Glu Phe Ser Tyr Ala Asp His Glu Ser Phe Thr  
885 890 895

Glu Glu Gly Asp Gln Ala Arg Ala Phe Arg Ser Gly His Leu Met Asn  
900 905 910

Leu Ser Val Pro Val Gly Val Lys Phe Asp Arg Cys Ser Ser Thr His  
915 920 925

Pro Asn Lys Tyr Ser Phe Met Gly Ala Tyr Ile Cys Asp Ala Tyr Arg  
930 935 940

Thr Ile Ser Gly Thr Gln Thr Thr Leu Leu Ser His Gln Glu Thr Trp  
945 950 955 960

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Ser Met Tyr Ala Ser Leu Thr Ser Asn Ile Glu Val Tyr Gly His Gly  
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Arg Tyr Glu Tyr Arg Asp Thr Ser Arg Gly Tyr Gly Leu Ser Ala Gly  
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Ser Lys Val Arg Phe  
1010

D12